International Journal of Nanoparticles 2015 vol.8 N1, pages 51-60

Electric field enhancement of gold tip optical antenna

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Abstract

Copyright © 2015 Inderscience Enterprises Ltd. This paper shows design of gold tip optical antenna based on the specific geometry. The enhancement changes of the electric field of plane wave laser excitation from 400 to 700 nm surrounding the optical antenna are simulated. Based on direct illumination of antenna apex in TENOM back ground signal is produced and cause efficiency of optical microscopy. In practice, one can change of antenna design and decrease this background signal. Developments of geometry incorporating the period change of circular grating in period 200 nm on the shaft of antenna. In addition, the distribution of enhancement of the electric field in a plane perpendicular to the shaft has been acquired.

http://dx.doi.org/10.1504/IJNP.2015.070344

Keywords

Field enhancement, Optical antenna, Surface plasmon, Tapered gold tip